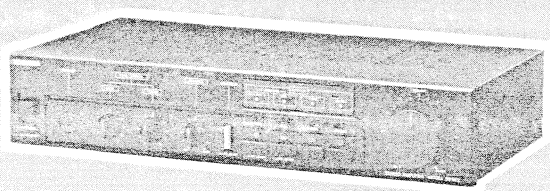


Diverse 34

TOSHIBA

STEREO AMPLIFIER

SB-M12



SPECIFICATIONS

■ General

Power supply: AC 120V, 60 Hz (TA, TC)
AC 220V, 50 Hz (TE)
AC 240V, 50 Hz (TU)
Power consumption: 100W (TE, TU)
1.5A (TA, TC)
Weight: 4 kg
Dimensions: 420(W) x 89(H) x 241(D) mm

■ Amplifier

Continuous power output:
20 Hz ~ 20 kHz (TA, TC)
60 Hz ~ 12.5 kHz (TE, TU)
both ch. driven: 30W + 30W (8Ω IEC) (TA, TC, TE)
25W + 25W (8Ω IEC) (TU)
Total harmonic distortion: at rated output: 0.9% at 1/2 rated output,
1 kHz: 0.07%
Frequency response: 20 Hz ~ 70 kHz (± 1 dB)
30 Hz ~ 15 kHz ± 0.5 dB (RIAA equ.)

Power band width (IHF): 40 Hz ~ 20 kHz (1% THD 8Ω)
Load impedance: 8Ω ~ 16Ω
S/N (IHF A Network): 97 dB (CD/TAPE/TUNER)
70 dB (PHONO)
Input sensitivity/impedance: PHONO 2.5mV/47KΩ
CD/TAPE2 150mV/47KΩ
Output level: TAPE2 REC 150mV/3.3KΩ
Tone control: BASS (at 100 Hz) ± 9 dB
TREBLE (at 10 kHz) ± 9 dB
Loudness control: +9 dB (at 100 Hz)
Phono overload level: 120mV (0.9% THD)

Heat dissipation:
When stacking audio equipment such as an amplifier, tuner and cassette deck, always be sure to place the amplifier at the top.

Because the amplifier radiates a significant amount of heat when driven at high power output, do not cover the ventilation openings.

Specifications are subject to change without notice.

TA, TC, TE, TU

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1. OPERATING CONTROLS

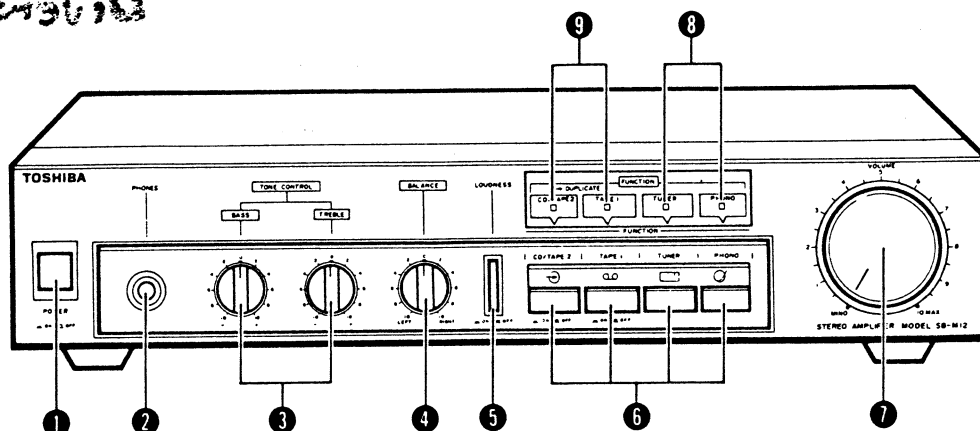


Figure 1

1 POWER switch

Depress this switch to turn the power on, depress again to turn the power off.

2 PHONES jack

Plug into this jack when listening through headphones.

3 BASS and TREBLE controls

Turn these knobs clockwise from the centre zero (flat) position to emphasize bass or treble. Turn counterclockwise to attenuate (decrease) bass or treble.

4 BALANCE control

Turn this knob to adjust volume balance between left and right speakers.

5 LOUDNESS switch

Depress this switch for listening at very low volume levels. The loudness circuit emphasizes the low frequency region for a natural tonal balance at low volume levels. (This switch is effective between zero and the midpoint position of the VOLUME control.)

6 FUNCTION selectors

Choose the desired program source by pressing one of these buttons:

PHONO:	For a turntable
TUNER:	For a tuner
TAPE 1:	For the PC-G12 connected to the TAPE 1
CD/TAPE 2:	For a compact disc player or a tape deck

7 VOLUME control

Turn this knob to adjust the volume level.

8 FUNCTION indicators

9 TAPE monitor indicators

Operations

Note: Until all connections have been properly completed, leave the power supply cords unplugged and the POWER switched OFF.

■ Connections of speakers to amplifier

Connect the right speaker cord to "R" amplifier speaker output terminal and the left speaker cord to "L" terminal. Be sure to connect the plus terminal of the speaker to the plus terminal of the amplifier speaker output terminal and minus to minus. Wrong connection of plus and minus results in loss of sound quality in the stereo mode.

- Be sure to leave the amplifier POWER switch OFF while making connections.

CAUTION: Before returning the unit to the customer, check that the resistance between both blades of AC plug and any accessible metal parts is more than $3M\Omega$ after completion of servicing, using the circuit tester. (TA Model only)

- Don't short-circuit the amplifier speaker output terminals.
- Note:** Use speakers with an impedance of at least 8 ohms to avoid overloading the amplifier.
- Confirm that the VOLUME control is in the zero position before power is turned on.

■ To play phonograph records

Connect output cables from turntable to PHONO jacks of the amplifier. If the turntable is equipped with an earth wire or terminal, be sure to connect it to earth terminal (GND) of the amplifier. Overlooking this simple point may result in hum.

2. SYSTEM CONNECTIONS

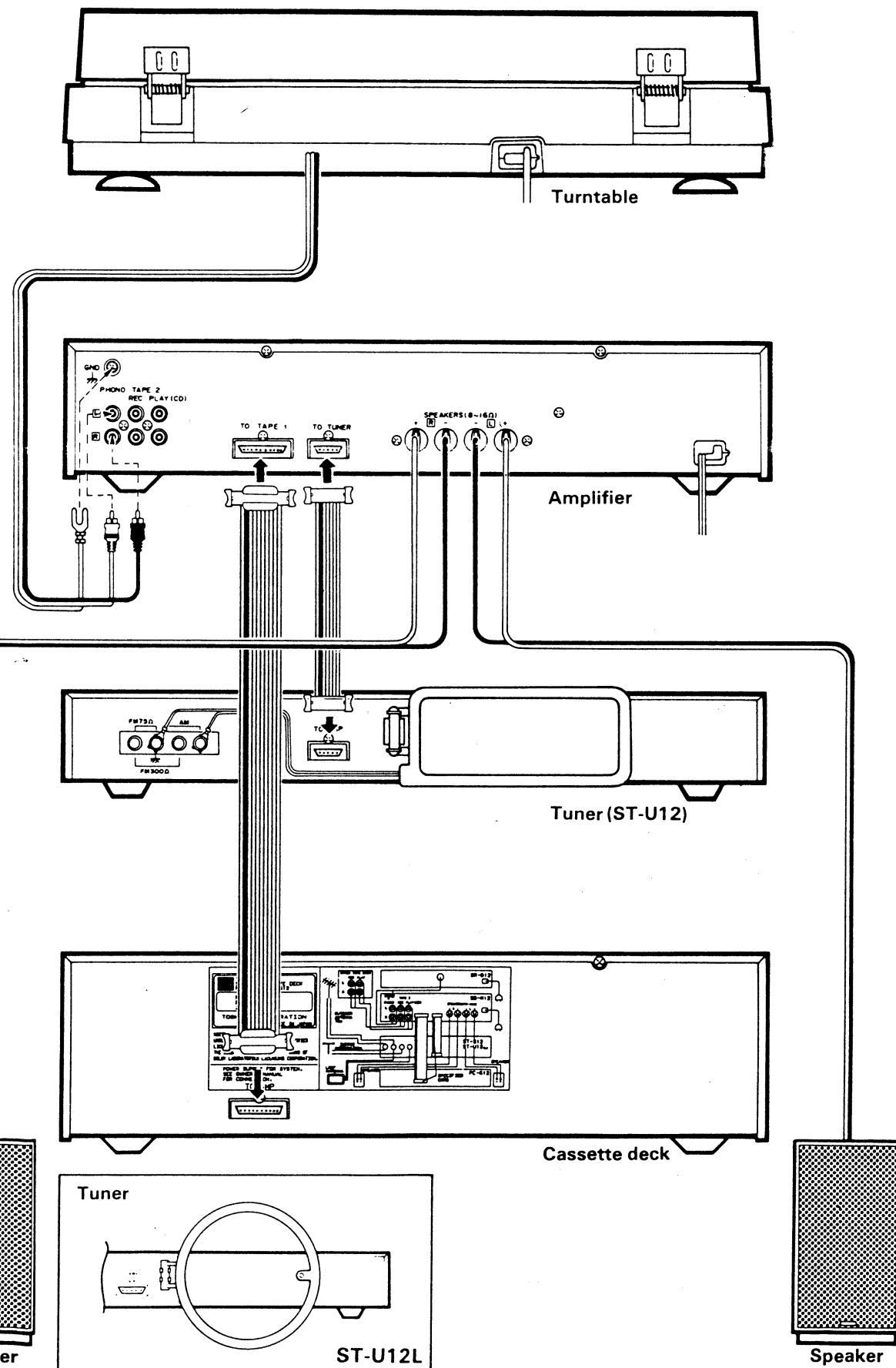


Figure 2

3 DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Remove four screws (A) and (B) ($\phi 3 \times 8\text{mm}$) on both sides.
2. Remove two screws (C) ($\phi 3 \times 8\text{mm}$) on back side, and the top cover will be removed.
(When removing the top cover, lift it up so that three claws fixing the top cover are disengaged from the cover.)

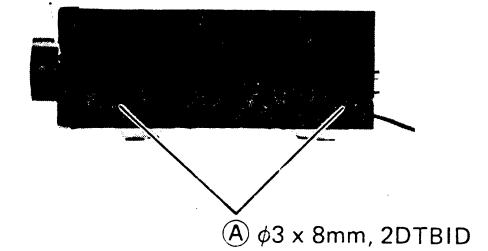


Figure 3

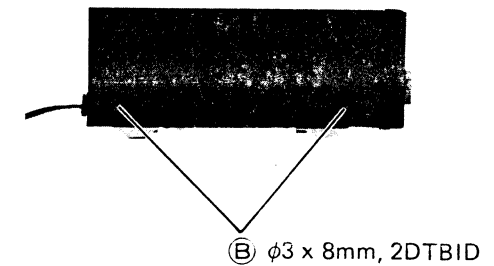


Figure 4

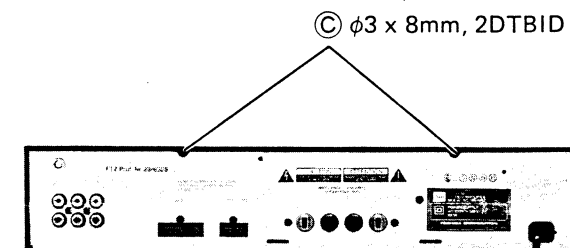


Figure 5

FRONT PANEL REMOVAL

1. Remove top cover.
2. Remove knobs on front panel and then remove volume nut.
3. Remove three screws (D) ($\phi 3 \times 8\text{mm}$) on bottom side.
4. Remove claws (E) and (F), and the front panel will be removed.

(D) $\phi 3 \times 8\text{mm}$, 2DTBID

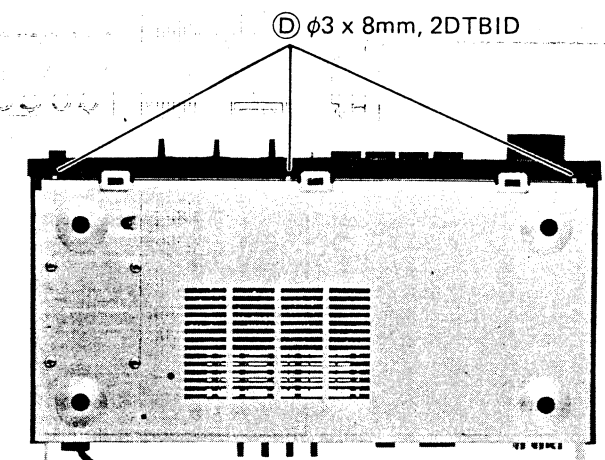


Figure 6

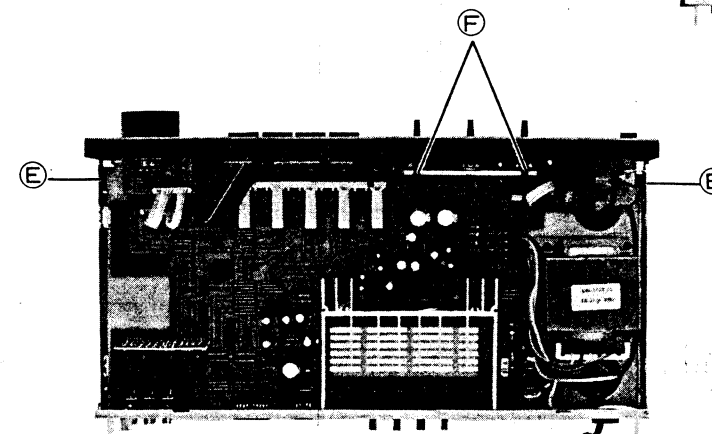


Figure 7

The diagram illustrates the internal circuitry of a portable CD player. Key components and sections include:

- Input Sections:** PHONO, REC, PLAY, and CD inputs, each with associated jacks (J1-J10) and capacitors (C1-C10).
- IC1 (CD Player Chip):** A central integrated circuit with a pinout table showing various voltage levels (e.g., 0V, -0.2V, -34.2V, -1.3V, -0.6V, -36.4V, -37.1V, -37.3V).
- Power Supply:** A transformer (T1) providing AC220V 50Hz, connected to a rectifier (F1) and a filter capacitor (C1). The power is distributed to various components via a power cord (EP01).
- Output Sections:** SPEAKERS (R and L), BALANCE (b/3), TREBLE (b/3), BASS (c/3), and PHONES (c/3).
- Volume Control:** A variable resistor (VR1) connected to the volume control input.
- Tape Section:** TAPE 1 and TAPE 2 inputs, each with a motor and associated components.
- Test Points:** Numerous test points (e.g., TP1, TP2, TP3) are indicated for troubleshooting.

The diagram is a detailed schematic showing the physical layout of components on a PCB, with component values and pin numbers clearly labeled.

Figure 8

5. SCHEMATIC DIAGRAM

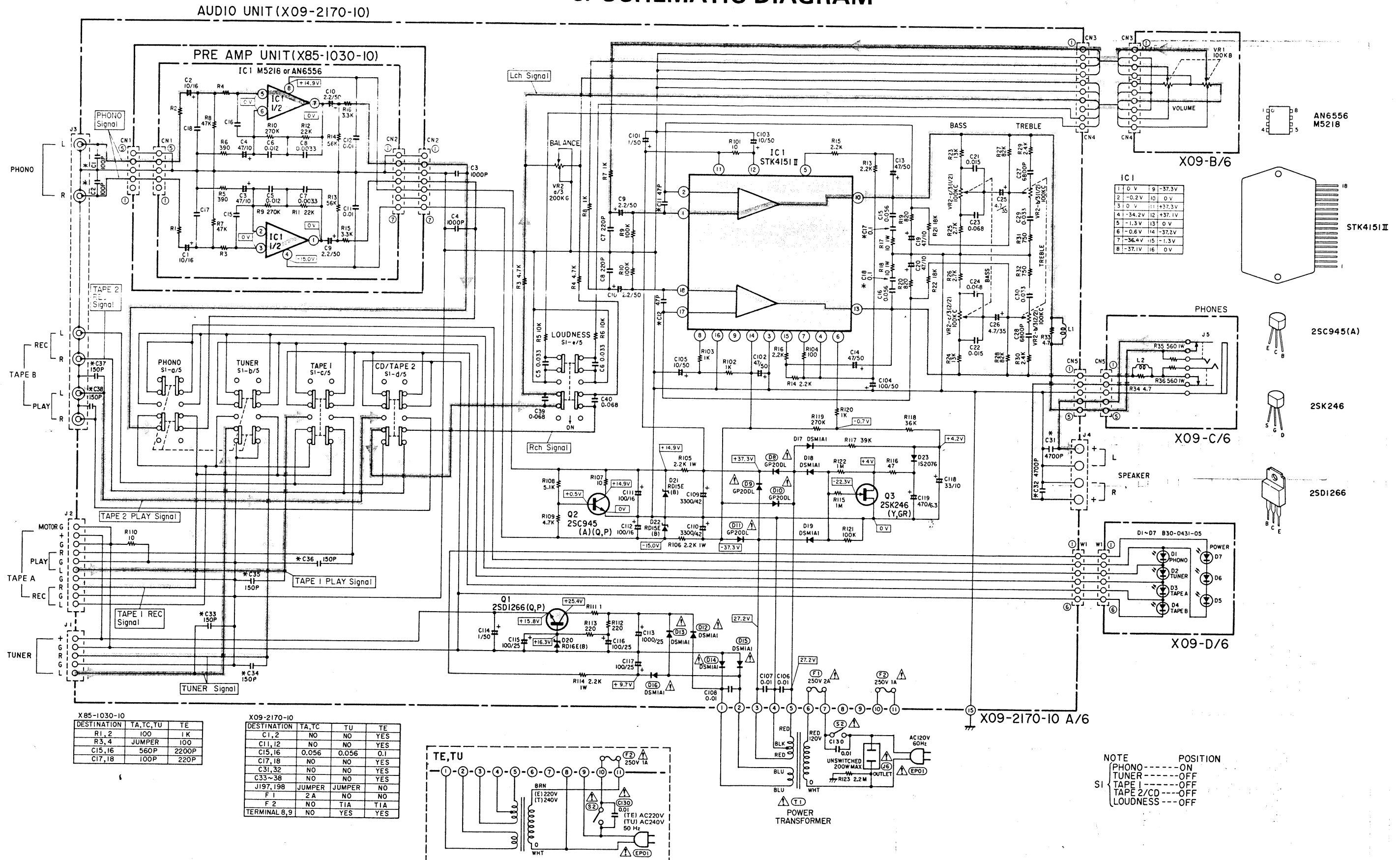


Figure 9

CAUTION:

The Δ mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

6. BLOCK DIAGRAM

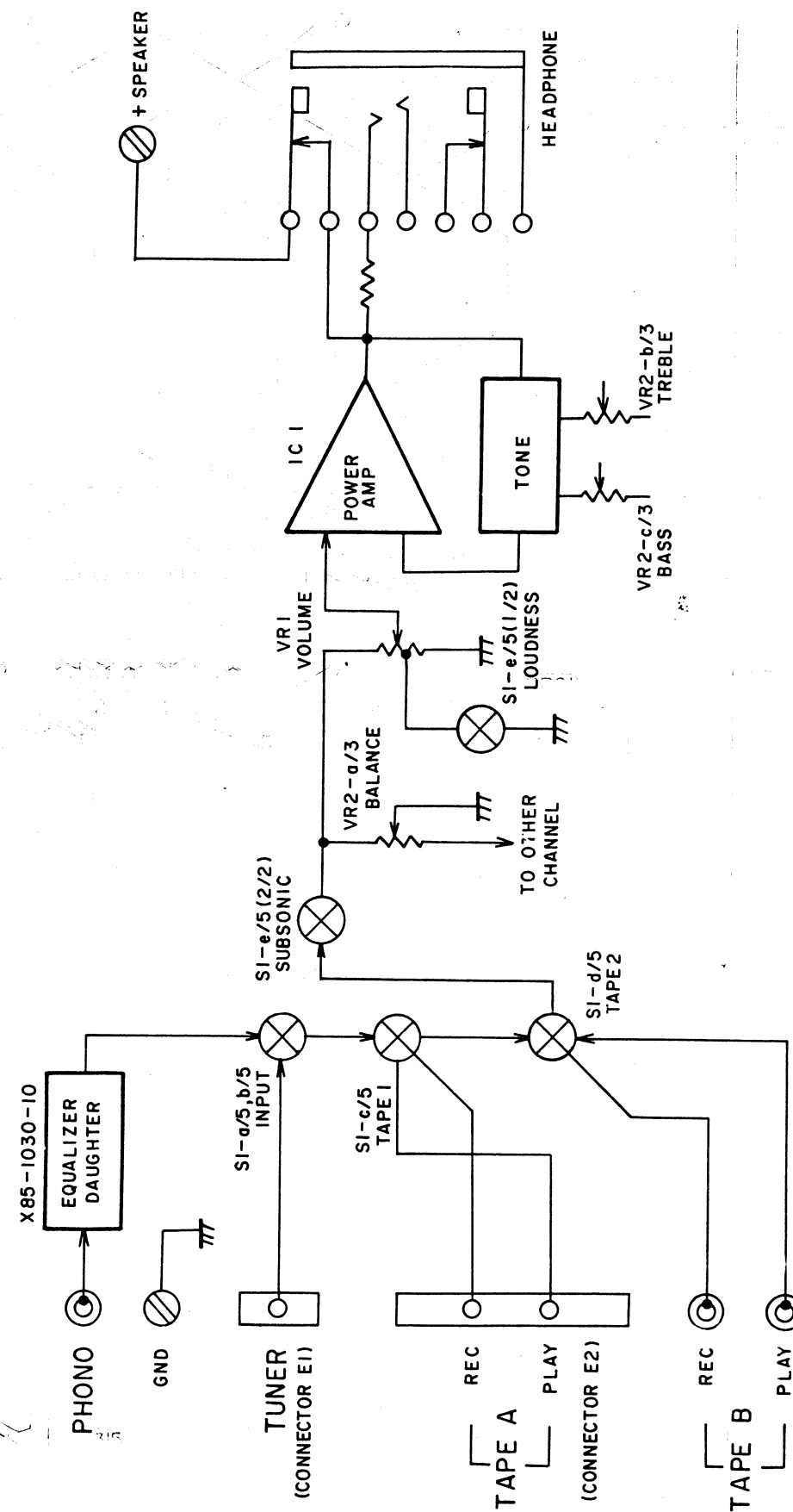


Figure 10

7. EXPLODED VIEW CABINET

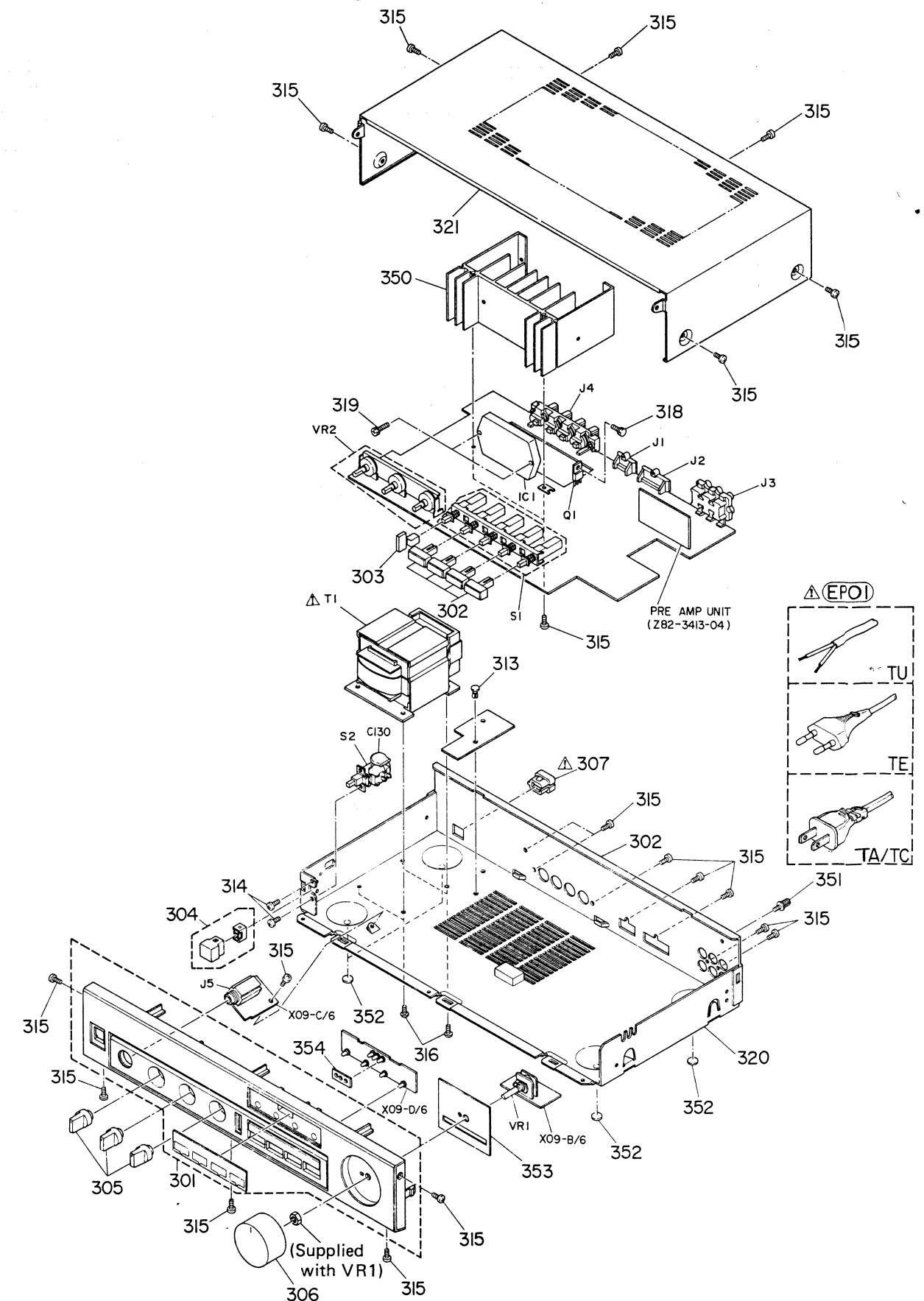


Figure 11

NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

9. PARTS LIST

CAUTION:

The $\triangle$ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
ICS, TRANSISTORS AND DIODES		
AUDIO UNIT		
IC1	22117653	IC, STK4151/2 or STK4141/2*1 (TA, TC)
Q1	22117655	Transistor, 2SD1266-Q/P
Q2	22114768	Transistor, 2SC945A-Q/P
Q3	A6044620	Transistor, 2SK246-Y/GR
D1, 2, 3, 4, 5, 6, 7	22115971	Diode, LN21CPH
D8, 9, 10, 11	22115886	Diode, GP20DL
D12, 13, 14, 15, 16, 17, 18, 19	22119029	Diode, DSM1A1
D20	22115450	Diode, RD16E (B2)
D21, 22	22119119	Diode, RD15E (B)
D23	22119099	Diode, 1SS131 or 1SS178
PRE-AMP UNIT		
IC1	22117552	IC, AN6556 or M5218P
ELECTRICAL PARTS		
AUDIO UNIT		
L1, 2	22210188	Coil
J1	22186074	Connector, 5P
J2	22186075	Connector, 10P
J3	22198170	Pin Jack, 6P
J4	22162534	Connector, 4P
J5	22198169	Phone Jack, 3P
J6	22169170	AC Out-Let (TC)

Symbol No.	Part No.	Description
$\triangle$ S1	22196664	Push Switch, PHONO/TUNER/TAPE A/TAPE B/LOUD
$\triangle$ S2	22196329	Push Switch, Power
$\triangle$ F1	22144527	Fuse, 2A 250V (TA, TC)
$\triangle$ F2	22144542	Fuse, 1A, 250V (TU, TE)
$\triangle$ T1	22224538	Transformer, Power (TA, TC)
$\triangle$ T1	22224540	Transformer, Power (TU)
$\triangle$ T1	22224541	Transformer, Power (TE)
$\triangle$ EP01	22176573	Cord, Power 10A (TA, TC)
$\triangle$ EP01	22176628	Cord, Power (TU)
$\triangle$ EP01	22176688	Cord, Power (TE)
$\triangle$ EP02	22165047	Fuse Holder (TU, TE)
$\triangle$ EP02	22165093	Fuse Holder (TA, TC)
CAPACITORS		
J = $\pm 5\%$, K = $\pm 10\%$, M = $\pm 20\%$, P = $-0+100\%$, Z = $-20+80\%$		
ABBREVIATIONS: CD = Ceramic Disk, PF = Plastic Film, EL = Electrolytic		
C1, 2	22360739	CD, 100pF, 50V, J (TE)
C3, 4	22321342	PF, 1000pF, 50V, K
C5, 6	22321273	PF, 0.033mfd, 50V, J
C7, 8	22362221	CD, 220pF, 50V, K
C9, 10	22440471	EL, 2.2mfd, 50V, M
C11, 12	22361470	CD, 47pF, 50V, J (TE)
C13, 14	22448470	EL, 47mfd, 50V, M
C15, 16	22321331	PF, 0.056mfd, 50V, J (TA, TC)
C15, 16	22321267	PF, 0.1mfd, 50V, J (TE)
C17, 18	22321267	PF, 0.1mfd, 50V, J (TE)
C19, 20	22443470	EL, 47mfd, 10V, M
C21, 22	22321237	PF, 0.015mfd, 50V, J

Symbol No.	Part No.	Description
C23, 24	22321268	PF, 0.068mfd, 50V, J
C25, 26	22447470	EL, 4.7mfd, 35V, M
C27, 28	22321269	PF, 6800pF, 50V, J
C29, 30	22321273	PF, 0.033mfd, 50V, J
C31, 32	22349682	CD, 6800pF, 50V, J
C33, 34,	22362151	CD, 150pF, 50V, K
35, 36,		
37, 38		
C39, 40	22321268	PF, 0.068mfd, 50V, J
C101, 102	22440489	EL, 1mfd, 50V, M
C103, 104	22448101	EL, 100mfd, 50V, M
C105	22448470	EL, 47mfd, 50V, M
C106, 107,	22360265	CD, 0.01mfd, 500V, P
108		
C109, 110	22440665	EL, 3300mfd, 42V, M
C111, 112	22445101	EL, 100mfd, 16V, M
C113	22486102	EL, 1000mfd, 25V, M
C114	22488109	EL, 1mfd, 50V, M
C115, 116,	22486101	EL, 100mfd, 25V, M
117		
C118	22483331	EL, 330mfd, 10V, M
△ C130	22340147	CD, 0.01mfd, 400V, P
PRE-AMP UNIT		
C1, 2	22440331	EL, 10mfd, 16V, M
C3, 4	22440450	EL, 47mfd, 10V, M
C5, 6	22321266	PF, 0.012mfd, 50V, J
C7, 8	22321330	PF, 3300pF, 50V, J
C9, 10	22440471	EL, 2.2mfd, 50V, M
C11, 12	22349103	CD, 0.01mfd, 50V, Z
C15, 16	22349222	CD, 2200pF, 50V, K (TE)
C15, 16	22343561	CD, 560pF, 50V, M (TA, TC)
C17, 18	22362221	CD, 220pF, 50V, K (TE)
C17, 18	22362101	CD, 100pF, 50V, K (TA, TC)
RESISTORS		
All resistors are carbon film 1/4W, $\pm 5\%$ unless otherwise noted. K = 1000 ohm, M = 1000K ohm		
AUDIO UNIT		
R3, 4	22584472	4.7K ohm, 1/6W
R5, 6	22545103	10K ohm
R7, 8	22584102	1K ohm, 1/6W
R9, 10	22545104	100K ohm

Symbol No.	Part No.	Description
R13, 14,	22545222	2.2K ohm
15, 16		
R17, 18	25750250	10 ohm, 1W
R19, 20	22545821	820 ohm
R21, 22	22584183	18K ohm, 1/6W
R23, 24	22580054	13K ohm, 1/6W
R25, 26	22584272	2.7K ohm, 1/6W
R27, 28	22584823	82K ohm, 1/6W
R29, 30	22545242	2.4K ohm
R31, 32	22540696	750 ohm
R33, 34	22545479	4.7 ohm
R35, 36	22570268	330 ohm, 1W
R101	22545100	10 ohm
R102	22545332	3.3K ohm
R103	22545221	220 ohm
R104	22545101	100 ohm
R105, 106	22570280	2.2K ohm, 1W
R107	22545100	10 ohm
R108	22540694	5.1K ohm
R109	22545472	4.7K ohm
R110	22584100	10 ohm, 1/6W
R111	22545109	1 ohm
R112, 113	22545221	220 ohm
R114	22570280	2.2K ohm, 1W
R115	22545105	1M ohm
R116	22545470	47 ohm
R117	22584223	22K ohm, 1/6W
R118	22584822	8.2K ohm, 1/6W
R119	22584104	100K ohm, 1/6W
R121	22545104	100K ohm
R122	22545106	1M ohm
R123	22500406	2.2M ohm, 1/2W, $\pm 20\%$ (TA, TC)
VR1	22657372	100K ohm, B, Semi-fixed Variable
VR2	22657373	100K ohm x 2, 200K ohm, Semi-fixed Variable
PRE-AMP UNIT		
R1, 2	22584101	100 ohm, 1/6W (TA, TC)
R1, 2	22584102	1K ohm, 1/6W (TE)
R3, 4	22584101	100 ohm, 1/6W (TE)
R5, 6	22584391	390 ohm, 1/6W
R7, 8	22584473	47K ohm, 1/6W
R9, 10	22584274	270K ohm, 1/6W
R11, 12	22584223	22K ohm, 1/6W
R13, 14	22584563	56K ohm, 1/6W
R15, 16	22584332	3.3K ohm, 1/6W

Symbol No.	Part No.	Description
ACCESSORIES		
AC01	22904542	Owner's Manual (TA)
AC01	22904543	Owner's Manual (TC)
AC01	22904541	Owner's Manual (TU)
AC01	22904540	Owner's Manual (TE)

Symbol No.	Part No.	Description